



07/18/97

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Honorable Commissioner  
of Patents and Trademarks  
Washington, D.C. 20231

Sir:

We enclose herewith the items identified below for patent application by Mr. William Lin entitled "TWO WAY MIRROR WITH DUAL FUNCTIONS OF REAR VIEW MIRROR AND VIDEO DISPLAYER":

1. A specification with drawings;
2. A check in an amount of \$425 (including \$385 basic filing fee, \$40 for independent claims in excess of 3);
3. A combined declaration and power of attorney for patent application; and
4. A verified statement as an independent investor and small entity.

Respectfully submitted,

Dated: July 17, 1997

By Chi-Ping Chang  
Chi-Ping Chang, Reg. No. 37,798

## CERTIFICATION UNDER 37 CFR SECTION 1.10

I hereby certify that this new application and the documents referred to as enclosed herein are being deposited with the United States Post Service on this date July 17, 1997, in an envelope bearing "Express Mail Post Office To Addressee", Mailing Label Number EM575992745US, addressed to :  
Honorable Commissioner of Patents and Trademarks , Washington, D.C. 20231.

7/17/97  
Date

[Signature]  
Signature

Sent correspondence to:

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408-288-8585

1- 7

## TWO WAY MIRROR WITH DUAL FUNCTIONS OF REAR VIEW MIRROR AND VIDEO DISPLAYER

### Field of the Invention

This invention relates generally to rear view  
5 mirrors for use in auto vehicles, and more specifically,  
to a rear view mirror which can functions either  
separately or simultaneously, as a mirror and a video  
display unit.

### Background of the Invention

10 Conventional rear view mirrors have a limited  
function of providing a driver of a motor vehicle with a  
reflected view of the area behind the driver both inside  
and outside the vehicle. In some instances, however,  
the conventional mirrors provide an incomplete or  
15 otherwise inadequate view of the area behind a vehicle.  
One example of this problem can be found in the case of  
large trucks, as illustrated by **FIG. 1** , in which the  
cargo area of the trucks **A** either partially or  
completely obstructs the view from the rear window of  
20 the vehicle such that the driver's view of the person **B**  
standing behind the vehicle is fully obstructed by cargo  
area **A**.

Another example of this problem is presented by the  
phenomenon known as the "blind spot" as illustrated by  
25 **FIG. 2**, in which conventional rear view mirrors provide

a limited view of the area behind and to the side of vehicles such that the motor vehicle D is in the "blind spot" of the motor vehicle C because the driver of vehicle C cannot see vehicle D in his rear view mirror.

5           Although several patents have issued for rear view mirrors that are capable of operating as fully functioning mirrors while displaying alphanumeric information, see for example U.S. Pat. No. 4,630,904 issued to R. Pastore [rear view mirror displays digital  
10 clock or radar detector], no prior rear view mirrors have been able to provide both a conventional, reflected rear view and a live video display of the area outside the vehicle.

15           It is therefore an object of the present invention to provide a mirror that can provide both a conventional, reflected rear view and a video image of the area outside of the vehicle. The present invention will also enable the driver to view a variety of entertaining, and/or useful and/or safety related  
20 information without needing to remove his/her eyes from the rear view mirror or needlessly interrupting the forward looking gaze that is generally recognized as the safest manner to operate a motor vehicle.

#### Summary of the Invention

This invention relates to a two way, rear view mirror that can provide both a conventional, reflected rear view and a video view of the area outside of the vehicle.

5           One aspect of the invention is to provide for a two way mirror that provides complete reflection when the video display is not being utilized. This two way mirror can be constructed of a tinted glass or a plastic or a clear glass or plastic that is made reflective by the addition of a thin, reflective film to the glass or  
10           plastic. In the preferred embodiment, this tinting or film is placed on a backside of the plastic or glass.

          Another aspect of the invention involves the placement of one or more video display monitors with a  
15           built-in light source behind the two way mirror. Said video display monitors can be of a variety of sizes and placed in a variety of positions behind the mirror intended to receive information from a variety of output/input devices to display such information on the  
20           two-way mirror when the video display monitors are being utilized.

#### Brief Description of the Drawings

          The present invention will be described with  
25           greater specificity and clarity with reference to the following figures, in which:

**FIG. 1** is a side view of a large garbage truck, in which the cargo area **A** of said vehicle either partially or fully obstructs the driver's view of a person **B** from the rear view mirror;

5        **FIG. 2** is a top view of motor vehicle **C** and motor vehicle **D**, in which motor vehicle **D** is in the "blind spot" of motor vehicle **C**;

**FIG. 3** is a front view of a two way mirror in accordance with the invention;

10       **FIG. 4** is a front view of a two way mirror in accordance with the invention in which two separate video monitors have been placed within the mirror;

**FIG. 5** is a front view of the two way mirror as shown in FIG 3 except that one video monitor has been placed within the entire mirror structure;

15       **FIG. 6** is a side view of said mirror assembly.

**FIG. 7** is another side view of said mirror assembly in which the back of the video display monitor protrudes beyond the side casing of the mirror assembly.

20       **FIG. 8** is a side view of the mirror assembly in which a reflective film is applied directly to the front side of the plastic or glass plate;

**FIG. 9** is a side view of said mirror assembly in which the reflective film is applied directly to the front screen side of a video display monitor;

**FIG. 10** is another side view of said mirror assembly in which a translucent flat plate is used to replace the reflective film;

**FIG. 11** reveals the multitude of possible applications for the instant invention; and

**FIG. 12** shows installation of cameras outside a motor vehicle to eliminate 'blind spot" in accordance with the invention.

#### Detailed Description of the Invention

Referring to **FIG.3**, there is shown a front view of a two way mirror **1** embodying the principles of this invention, with a video display monitor **2** being positioned in the center of the mirror **1** and being utilized by a driver of the motor vehicle. As seen in this diagram, the driver of the motor vehicle is able to see a conventional rear view in a left and right hand portions **E'** & **E** of the mirror **1** that do not directly abut the video display monitor **2**. At the same time, the driver is able to see an image **F** being displayed on the video display monitor **2**, thus providing the driver with access to the video display and simultaneously leaving the left and right hand portions **E'** and **E** of the mirror **1** for conventional reflection viewing. As an additional option, an audio device such as a speaker **3** can be placed within the left hand protion **E'** to provide a

sound effect while the image **F** is being displayed. When the video display is not being utilized, the entire mirror is available for conventional reflection viewing.

Referring to **FIG. 4**, there is shown a front view of the two way mirror **1** according to the invention in which two separate video display monitors **2** have been placed within the mirror. Under this arrangement, the driver has access to either the left video monitor, the right video monitor, or both video monitors while a portion of the mirror remains available for conventional reflection viewing. When the video displays are not being utilized, the entire mirror is available for conventional reflection viewing.

Referring to **FIG. 5**, there is shown a front view of one more arrangement of the two way mirror **1** according to the invention in which one video display monitor **2** has been placed within the entire mirror structure. When the video display is not being used, the entire mirror is available for conventional reflection viewing.

Referring jointly to **FIGs. 3, 4, and 5**, it becomes apparent that depending on the needs and preferences of the driver, one or more video display monitors **2** can be positioned in a variety of locations within the mirror **1**.

Referring jointly to **FIGs. 6 and 7**, it is shown that the mirror **1** is constructed of a flat transparent

plate 4, which may be either a glass plate or a plastic plate, on a back side of which is placed a translucent reflective film 5 made by either silver or aluminum. On the back side of the flat transparent plate 4 is mounted  
5 a casing 8 made of solid plastic or metal materials, in conjunction with a metal clip 8a, to hold the mirror 1 along the circumference of the mirror 1 which may be mounted to a surface by a support column 9.

The casing 8 is mounted to the mirror 1 in such a  
10 way that a space is provided to accommodate the video display monitor 2 which is mounted in and enclosed entirely inside the casing 8 and placed directly behind the reflective film 5, in a variety of positions as illustrated by FIGS. 3, 4, and 5 above. The video  
15 display monitor 2 has a video display screen 7 at its front side for image display and a back side 6 from where a lead wire (not shown) leaves the rear of video display monitor 2 through a suitable openings on the casing 5 to connect to a source of electrical power and  
20 ground.

Although FIGS. 6 and 7 illustrate the preferred embodiments of the invention, FIGS. 8 and 9 illustrate that the reflective film 5 can be placed in a variety of locations, including at a front side of the flat  
25 transparent plate 4, which may be either a glass or a plastic plate as shown in Fig. 8. Alternatively, the



reflective film 5 can be placed directly on a front side of the video display screen 7 of the video display monitor 2 as shown in **Fig. 9**.

It should be noted, however, as illustrated in **Fig. 10**, that the flat transparent plate 4 described above can be eliminated. Instead, a tinted glass or plastic plate 4a can be used in place of the flat transparent plate without the need for a reflective film.

As illustrated in **Fig. 11**, the video display monitor 2 is provided with a lead wire connecting to a power source 10 through the control of a switch 11 which controls the "on" and "off" status of the video display monitor 2. The video display monitor 2 can be a commercially available monitor equipped with a built-in light source suitably adopted to achieve and to perform the video display function according to the invention. In the alternative, the video display monitor 2 can be made customarily to achieve such video display function. As such, the video display monitor 2 is suitably utilized to display information from a variety of input/output devices or sources, including, but not limited to television broadcast transmitted by a television antenna or a tuner 12, a global positioning system (G.P.S.) or an electronic map device 13, a video camera 14 for recording and transmitting continuous live image and pictures, a video cassette recorder (VCR) or a

cable television 15 for viewing video cassette, a computer generated image or information, whether from floppy disk, hard drive, CD ROM, or wireless network 16, and any other type of video and audio device 17 now in  
5 existence or hereinafter invented.

It is apparent from the above description, the reflective film 5 in combination with the flat transparent plate 4 as illustrated in FIGs 6, 7, 8 and 10 or the tinted glass or plastic plate 4a as  
10 illustrated in FIG. 10 show translucent characteristic against the incoming light while the video monitor display 2 and the video display screen 7 have solid and non-transparent characteristic. Thus, when the light comes in from the viewing side of the mirror while the  
15 video display monitor 2 is not activated, the two-way mirror 1 of the invention functions as an ordinary rear view mirror. On the other hand when the video display monitor 2 is activated, the light emitted from the built-in light source of the video display monitor 2  
20 pass through from the non-viewing side of the mirror 1, thereby allowing a portion of the mirror that corresponds to the area of the video display screen 7 functions as a video displayer.

Referring to FIG. 12, there is shown an application  
25 of the invention to solve the "inadequate view" or

"blind spot" problems associated with the conventional mirrors. One or more cameras 18 are installed either on the left or right side mirrors or on the rear window of the motor vehicle or large truck to provide continuous video input and coverage of the area constituting "blind spot" which can be viewed by the driver inside the vehicle from the two way mirror provided by the invention to eliminate any potential problems resulting from "inadequate view" or "blind spot".

The invention now being fully described, it will be apparent to one of ordinary skill in the art that many changes and modifications can be made thereto without departing from the spirit or scope of the invention as set forth herein.

What is claimed is:

1. A two way mirror suitable for providing alternatively or simultaneously both a conventional reflected image and a video image, said two way mirror comprising, in combination :

(a) a flat transparent plate;

(b) a reflective film placed upon a backside of said flat transparent plate;

(c) a casing mounted to a backside of said flat transparent plate to hold said two way mirror; and

(d) at least one video display monitor with a built-in light source mounted in and enclosed entirely inside said casing and positioned directly behind said reflective film to receive and display image received from a variety of information sources; whereby said two way mirror functions as an ordinary mirror when said video display monitor is inactivated to turn off the built-in light source while the same functions as a image display when said video display monitor is activated to turn on the built-in light source.

2. The two way mirror of claim 1 wherein said flat transparent plate may be either a glass plate or a plastic plate.

3. The two way mirror of claim 1 wherein said information sources consist of a plurality of input/output devices selected from the group of television, satellite transmission including global positioning system, video cassette recorder, video camera, computer, wireless network, and audio devices.

4. A two way mirror suitable for providing alternatively or simultaneously both a conventional reflected image and a video image, said two way mirror comprising, in combination :

(a) a flat transparent plate;

(b) a reflective film placed upon a front side of said flat transparent plate;

(c) a casing mounted to a backside of said flat transparent plate to hold said two way mirror; and

(d) at least one video display monitor with a built-in light source mounted in and enclosed entirely inside said casing and positioned directly behind said flat transparent plate to receive and display image received from a variety of information sources; whereby said two way mirror functions as an ordinary mirror when said video display monitor is inactivated to turn off the built-in light source while the same functions as a image display when said video display monitor is activated to turn on the built-in light source.

5. The two way mirror of claim 4 wherein said flat transparent plate may be either a glass plate or a plastic plate.

6. The two way mirror of claim 4 wherein said information sources consist of a plurality of input/output devices selected from the group of television, satellite transmission including global positioning system, video cassette recorder, video camera, computer, wireless network, and audio devices.

7. A two way mirror suitable for providing alternatively or simultaneously both a conventional reflected image and a video image, said two way mirror comprising, in combination :

(a) a flat translucent plate;

(b) a casing mounted to a backside of said flat translucent plate to hold said two way mirror; and

(c) at least one video display monitor with a built-in light source mounted in and enclosed entirely inside said casing and positioned directly behind said flat translucent plate to receive and display image received from a variety of information sources; whereby said two way mirror functions as an ordinary mirror when said video display monitor is inactivated to turn off the built-in light source while the same functions as a image display when said video display monitor is activated to turn on the built-in light source.

8. The two way mirror of claim 7 wherein said flat translucent plate may be either a tinted glass plate or a tinted plastic plate.

9. The two way mirror of claim 7 wherein said information sources consist of a plurality of input/output devices selected from the group of television, satellite transmission including global positioning system, video cassette recorder, video camera, computer, wireless network, and audio devices.

10. A two way mirror suitable for providing alternatively or simultaneously both a conventional reflected image and a video image, said two way mirror comprising, in combination :

(a) a flat transparent plate;

(b) a reflective film placed upon a backside of said flat transparent plate;

(c) a casing mounted to a backside of said flat transparent plate to hold said two way mirror; and

(d) at least one video display monitor with a built-in light source mounted in said casing and positioned directly behind said reflective film to receive and display image received from a variety of information sources; whereby said two way mirror functions as an ordinary mirror when said video display monitor is inactivated to turn off the built-in light source while the same functions as a image display when

said video display monitor is activated to turn on the  
built-in light source.



### Abstract of the Invention

The present invention discloses a two way, rear view mirror suitable for providing alternatively or simultaneously both a conventional reflected image and a video image. A preferred two way mirror of the invention comprises a flat transparent plate coated with or glued with a reflective film mounted within a casing which provides supports for the mirror and a mounting space for at least one video display monitor with a built-in light source mounted in said casing and positioned directly behind said reflective film to receive and display image received from a variety of information sources.

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 CFR 1.9(f) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9© for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled TWO WAY MIRROR WITH DUAL FUNCTIONS OF REAR VIEW MIRROR AND VIDEO DISPLAYER described in

- ☒ the specification filed herewith.  
☐ application serial no. , filed .  
☐ patent no. , issued .

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9© if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ no such person, concern, or organization  
☐ persons, concerns or organizations listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time or paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

INVENTOR(S):

William Lin

Will Lin

Signature

July 17, 97

Date

# **COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY**

Atty Docket No. 6077-01

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**TWO WAY MIRROR WITH DUAL FUNCTIONS OF REAR VIEW MIRROR AND VIDEO  
DISPLAYER**

the specification of which (check one) ☒ is attached hereto or was filed on as Application Serial No. 08/896488 and was amended on (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

=====  
I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

Yes No

X —

Number	Country	Day/Month/Year Filed
N/A	China	18/07/96

=====  
I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information which is material to patentability

as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Application Ser. No.	Filing Date	Status: Patented, Pending, Abandoned
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I HEREBY APPOINT THE FOLLOWING AS MY ATTORNEYS WITH FULL POWER OF SUBSTITUTION TO PROSECUTE THIS APPLICATION AND TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH:

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Reg. No. 37,798

Kam T. Tam  
Reg. No. 35,756

Joe Zheng  
Reg. No. 39,450

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Telephone: (408) 288-8585

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor Willian Lin

Inventor's signature Will L July 17, 97  
Date

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Citizenship USA

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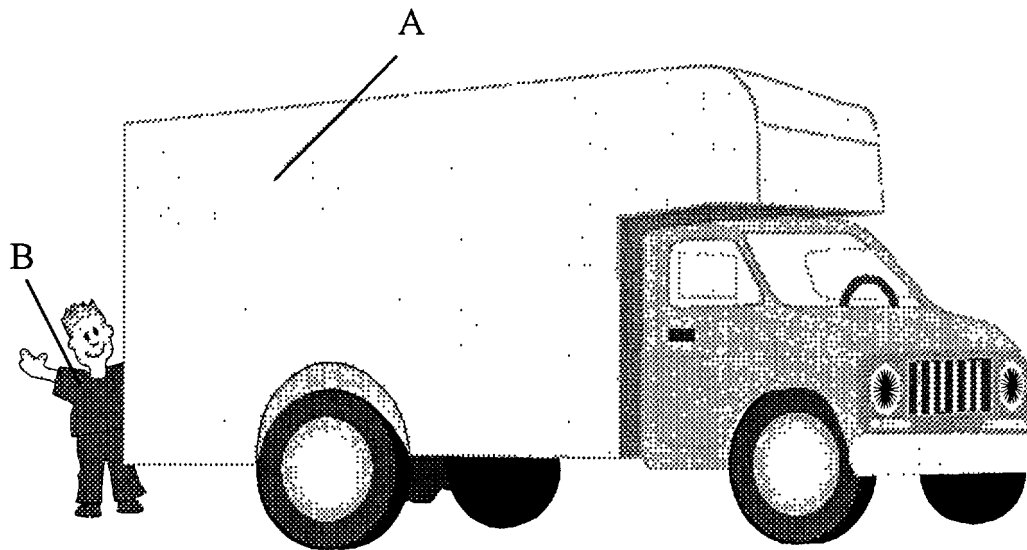


Fig. 1

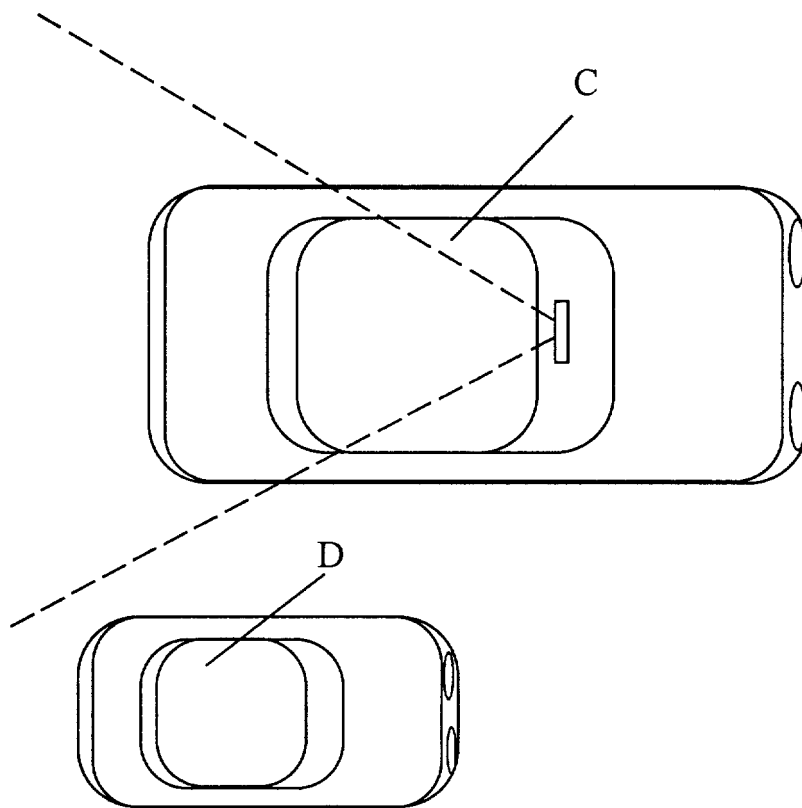


Fig. 2

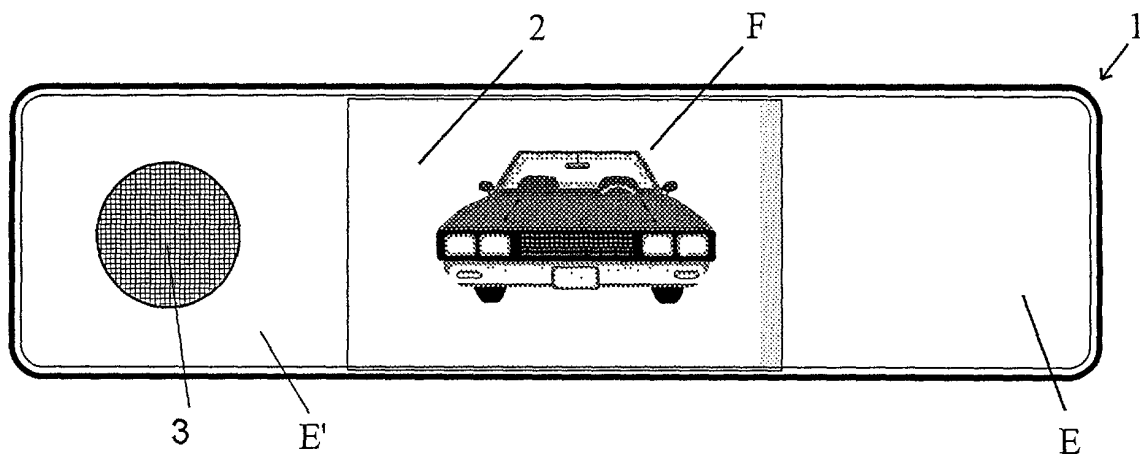


Fig. 3

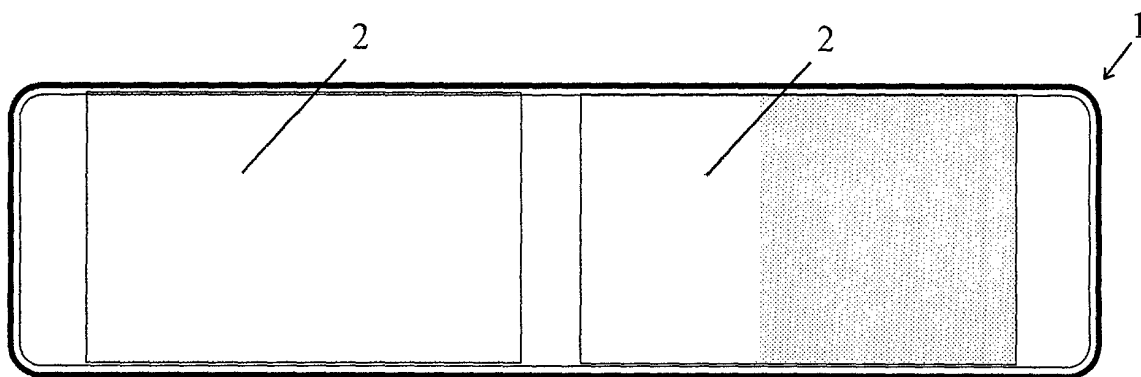


Fig. 4

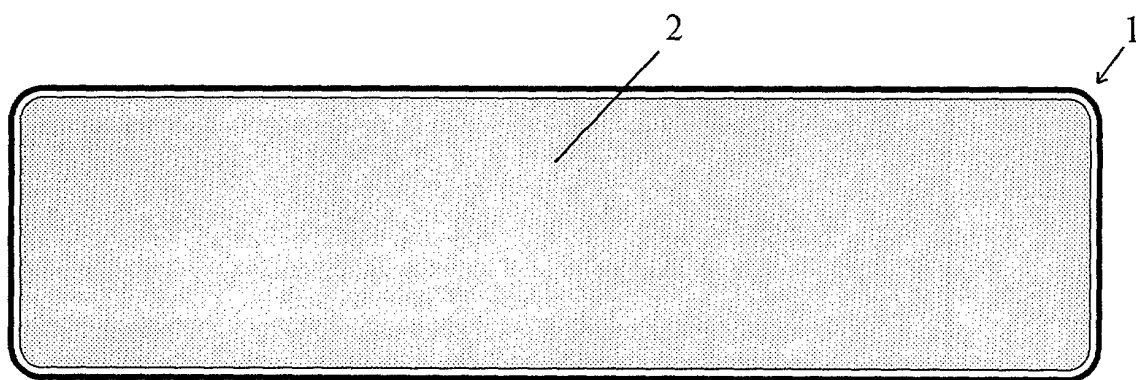


Fig. 5

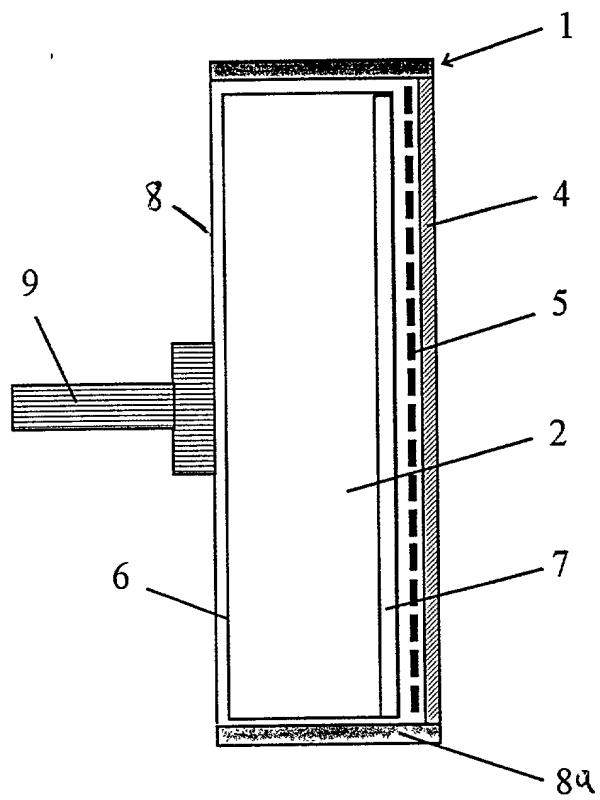


Fig. 6

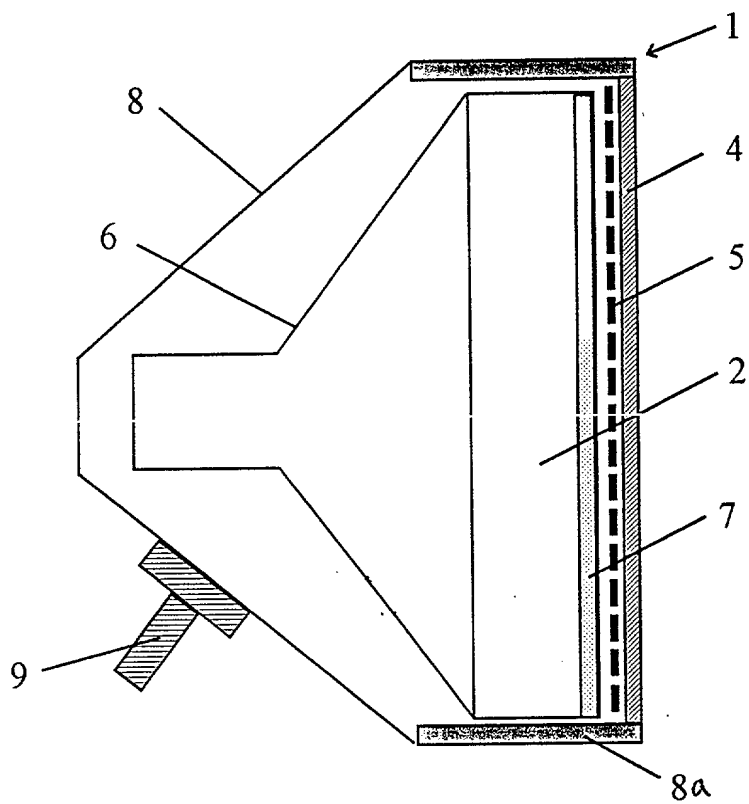


Fig. 7



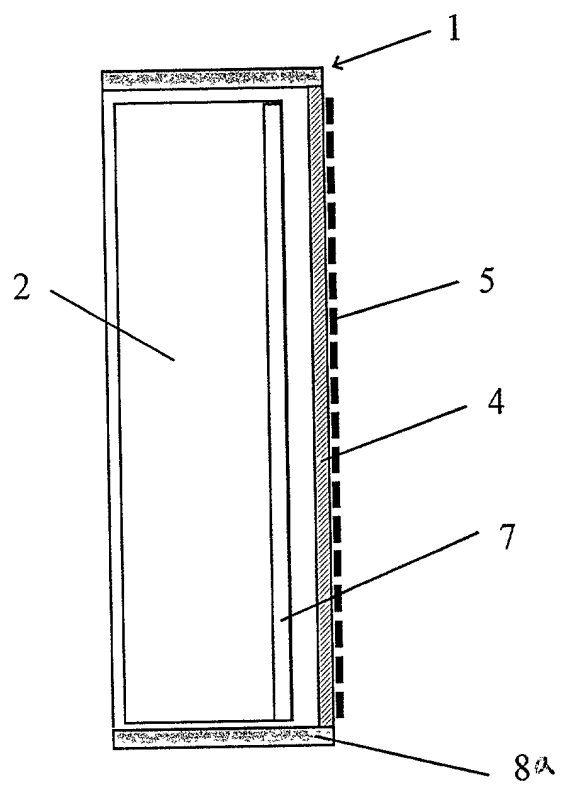


Fig. 8

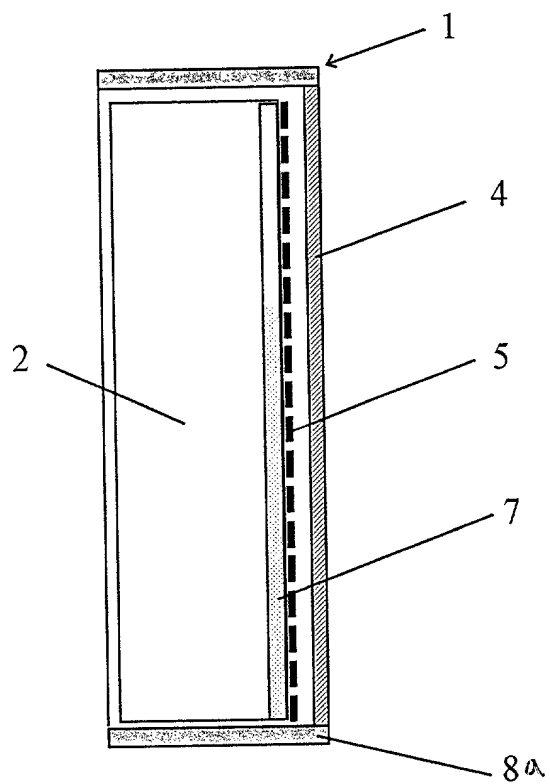


Fig. 9

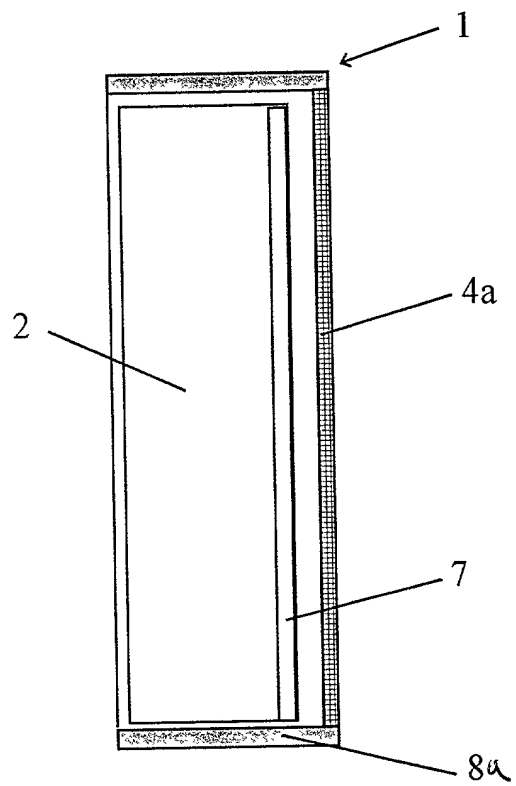


Fig. 10

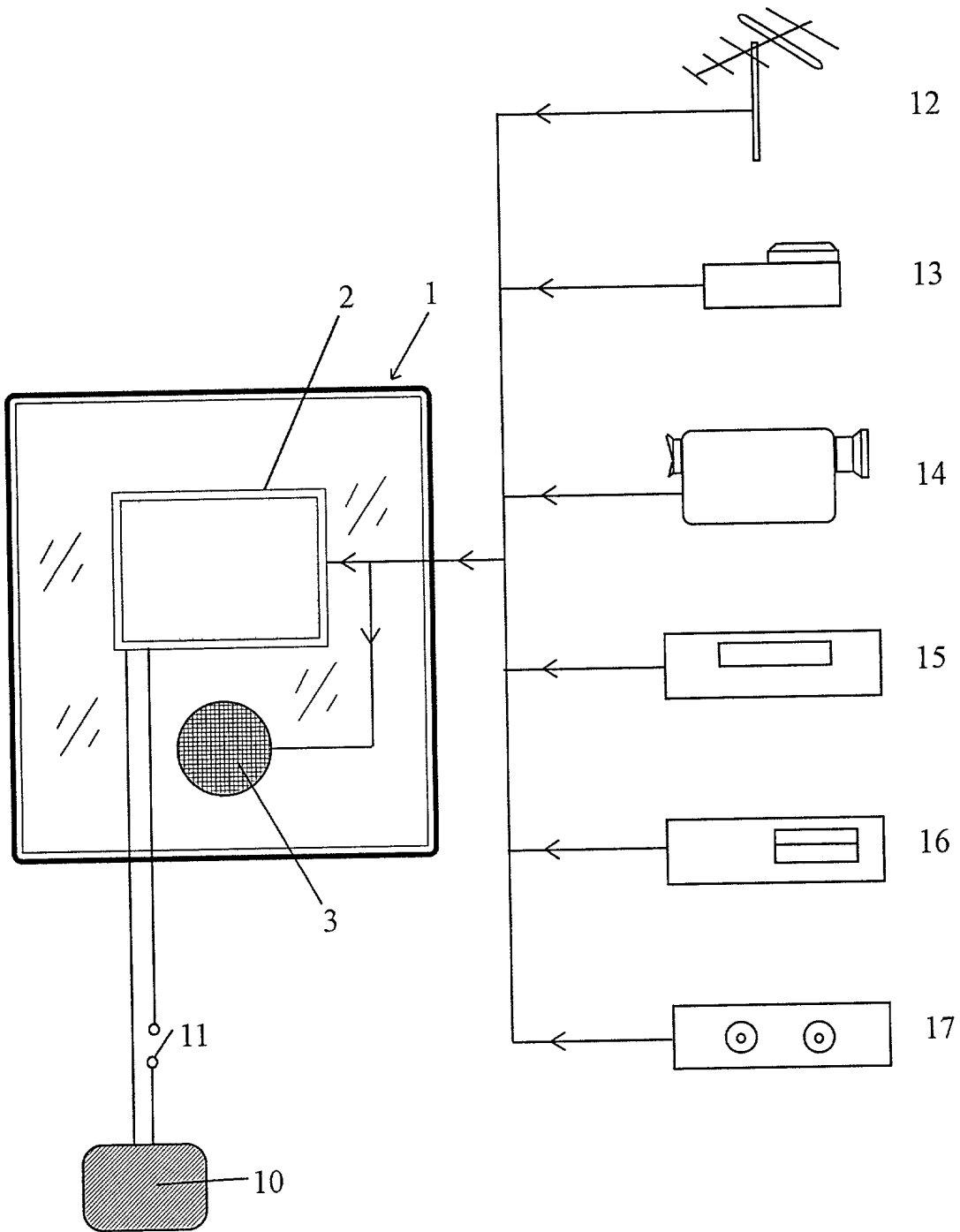


Fig. 11

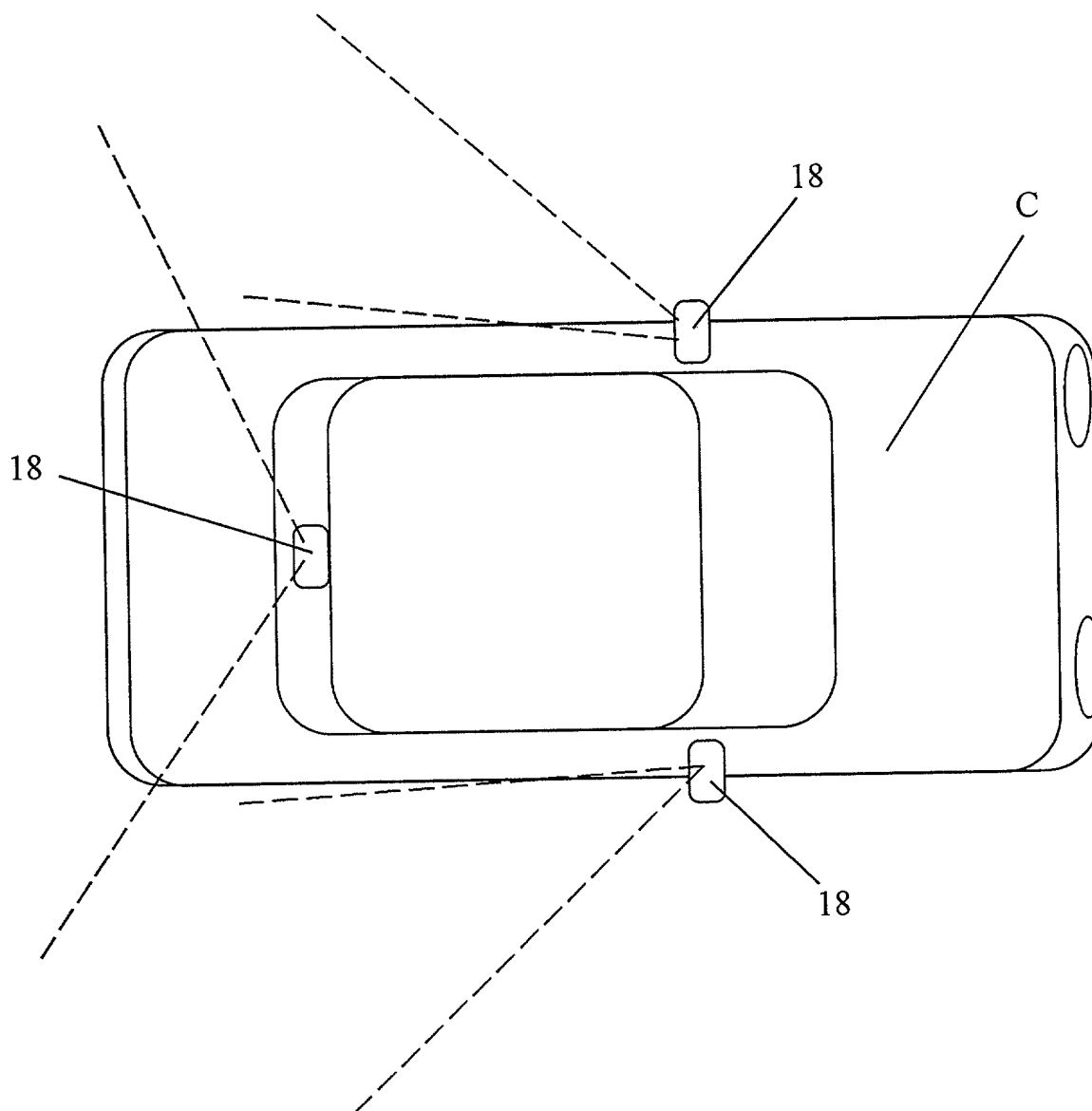


Fig. 12